

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

TAMURA, TAKAHIRO

Divisional of

Appln. No.: 09/374,112

Confirmation No. Not Assigned

Group Art Unit: Not Assigned

Filed: June 6, 2001

Examiner: Not Assigned

For: PLASMA CLEANING METHOD AND PLACEMENT AREA PROTECTOR USED IN  
THE METHOD

**PRELIMINARY AMENDMENT**

Commissioner for Patents

Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

**IN THE CLAIMS:**

**Please enter the following amended claims:**

12. (Amended) A plasma cleaning method comprising the steps of:

placing a plate-shaped placement area protector made of a material having electrical properties which are the same as that of an unnecessary film deposited on a surface of a substrate stage and an inner face of a vacuum vessel during substrate processing, said placement area protector having surface dimensions and shape matching at least one of: a surface of a substrate to be processed and an area for substrate placement on the surface of the substrate stage, said placement area protector being placed on the area for substrate placement so as to cover the area; introducing an etching gas into the vacuum vessel by a gas introduction mechanism;

applying a high-frequency electromagnetic wave to the substrate stage from a stage high-frequency electromagnetic wave supply so as to form plasma in the proximity of the surface of the substrate stage; and

removing the unnecessary film deposited on the surface of the substrate stage and the inner face of the vacuum vessel by using an etching action of the gas enhanced by the plasma.

13. (Amended) The plasma cleaning method as claimed in claim 12, wherein pressure of the introduced etching gas ranges from 0.5 to 5 Torr.

14. (Amended) A plate-shaped placement area protector used in a plasma cleaning method comprising the steps of: placing said placement area protector on an area for substrate placement in a surface of a substrate stage in a vacuum vessel so as to cover the area; introducing an etching gas into the vacuum vessel; applying a high-frequency electromagnetic wave to the substrate stage so as to form plasma in the proximity of the surface of the substrate stage; and removing an unnecessary film deposited on the surface of the substrate stage and an inner face of the vacuum vessel by using an etching action of the gas enhanced by the plasma,

wherein said placement area protector is made of a material having electrical properties which are the same as that of the unnecessary film deposited on the surface of the substrate stage and the inner face of the vacuum vessel during substrate processing, said placement area protector having surface dimensions and shape matching at least one of: a surface of a substrate to be processed and the area for substrate placement.

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**Please add the following new claims:**

--18. The plasma cleaning method according to claim 12, wherein the high frequency electromagnetic wave has a frequency on the order of 3 to 30 MHz.

19. The plate shaped area protector of claim 14, wherein the high frequency electromagnetic wave has a frequency on the order of 3 to 30 MHz.--

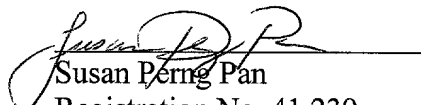
**REMARKS**

Applicant submits that independent claims 12 and 14 are patentable since none of the cited references teach a placement area protector having the electrical characteristics of an unnecessary deposited film.

In view of the foregoing, claims 12-16 and newly added claims 18 and 19 are in condition for allowance and should be passed to issuance at the earliest possible time.

Respectfully submitted,

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Date: June 6, 2001

**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**Claims 1-11 and 17 are canceled.**

**The claims are amended as follows:**

12. (Amended) A plasma cleaning method comprising the steps of:

placing a plate-shaped placement area protector made of a material having electrical properties which are the same as that of an unnecessary film deposited on a surface of a substrate stage and an inner face of a vacuum vessel during substrate processing, said placement area protector having surface dimensions and shape matching at least one of: a surface of a substrate to be processed and an area for substrate placement on the surface of the substrate stage, said placement area protector being placed on the area for substrate placement so as to cover the area;

introducing an etching gas into the vacuum vessel by a gas introduction mechanism;

applying a high-frequency electromagnetic wave [power] to the substrate stage from a stage high-frequency electromagnetic wave [power] supply so as to form plasma in the proximity of the surface of the substrate stage; and

removing the unnecessary film deposited on the surface of the substrate stage and the inner face of the vacuum vessel by using an etching action of the gas enhanced by the plasma.

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13. (Amended) The plasma cleaning method as claimed in claim 12, wherein pressure of the introduced etching gas ranges from 0.5 to 5 Torr.[.]

14. (Amended) A plate-shaped placement area protector used in a plasma cleaning method comprising the steps of: placing said placement area protector on an area for substrate placement in a surface of a substrate stage in a vacuum vessel so as to cover the area; introducing an etching gas into the vacuum vessel; applying a high-frequency electromagnetic wave [power] to the substrate stage so as to form plasma in the proximity of the surface of the substrate stage; and removing an unnecessary film deposited on the surface of the substrate stage and an inner face of the vacuum vessel by using an etching action of the gas enhanced by the plasma,

wherein said placement area protector is made of a material having electrical properties which are the same as that of the unnecessary film deposited on the surface of the substrate stage and the inner face of the vacuum vessel during substrate processing, said placement area protector having surface dimensions and shape matching at least one of: a surface of a substrate to be processed and the area for substrate placement.

**Claims 18 and 19 are added as new claims.**